Bundesministerium
Verkehr, Innovation
und Technologie

Bundesministerium
Digitalisierung und
Wirtschaftsstandort

AIM AT 2030

Artificial Intelligence Mission Austria 2030

Shaping the Future of Artificial Intelligence in Austria

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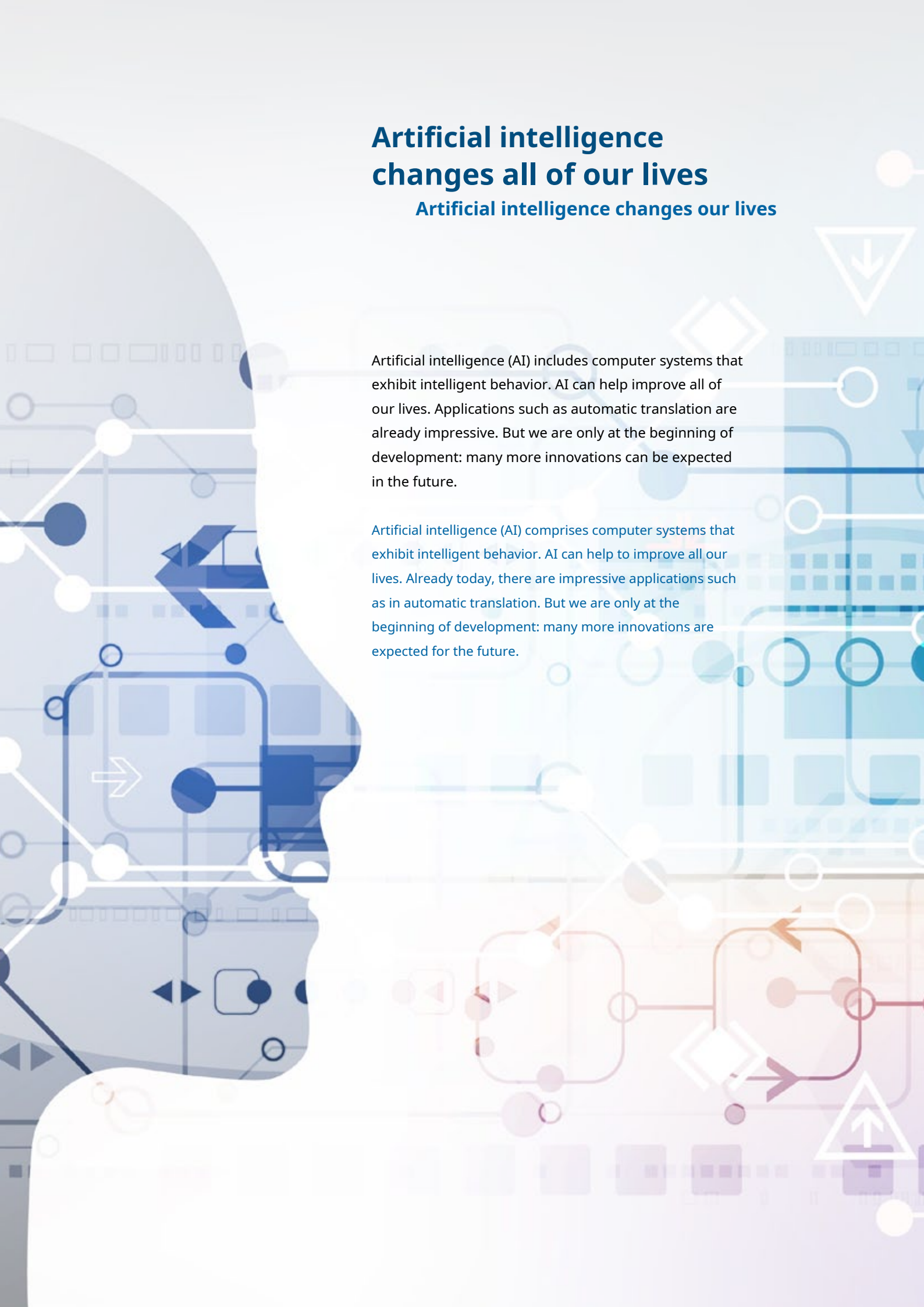

Artificial intelligence changes all of our lives

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What is possible today, what is being done?

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Systems based on artificial intelligence analyze their environment and act autonomously to achieve certain goals. They function using rule knowledge created by experts or on the basis of statistical models derived from data (machine learning or deep learning). AI includes both pure software systems that perform actions in virtual environments and hardware such as robots.

The areas of application of AI are diverse. They range from systems that understand human language (e.g. automatic translators) to programs that analyze visual information (e.g. in autonomous driving), search engines, and systems that draw conclusions from data. These also include assistance and advisory programs or autonomous robots and vehicles. AI systems are often an integrated part of other technical systems, e.g. in cars.

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PERCEIVE
Perception

- Machine Vision
  Machine vision
- audio processing
  audio processing
- sensor technology
  sensors

UNDERSTAND
Understanding

- Natural Language
  Natural language
- analyzing texts
  text analysis
- translating and interpreting
  Translation and interpretation
- Learning from Data
  Learning from data

ACT
Action

- search/optimization
  Search / Optimization
- prepare decisions
  Prepare decisions
- Autonomous behavior
  Autonomous behavior
- make predictions
  Making predictions

AI includes methods that enable machines to perceive their environment in a similar way to humans, understand situations and take actions in the environment.

AI includes methods that enable machines to interpret their environment in a similar way to humans, to understand situations, and to act in the environment.

Application areas of AI

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AI systems have become much more powerful in recent years: due to increasing digitalization (miniaturization, sensors, networking), the availability of data has increased significantly.

At the same time, the costs of data storage and computing power have fallen sharply. In addition, there are now a number of robust and therefore relatively easy-to-use AI methods, some of which are also available as an Internet service (cloud) and are therefore easily accessible.

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voice assistants
Language assistants
chatbots, information systems
Chatbots, information systems

Automatic translation
Automatic translation
text translation, spoken language *Text translation, spoken language*

consulting systems
Advisory systems
Medical Support, Industrial Maintenance
Medical support, industrial maintenance

Adaptive controls
Adaptive control
Self-learning industrial plants
Self-learning industrial plants

image analysis
Image analysis
error detection in production
Error detection in production

video recognition
video detection
Action Recognition in Video Data
Action recognition in video data

games
games
Artificial game characters, gesture recognition
Artificial game characters, gesture recognition

robotic surgery
Robotic surgery
tumor removal, Orthopedic milling robots
Tumor removal, orthopedic milling robots

Learn
Learning
Intelligent learning environments
Smart tutoring systems

Autonomous driving
Autonomous driving
Self-driving transport robots, autonomous buses
Self-driving transport robots, autonomous buses

These AI innovations are being worked on

Work is underway on these AI innovations

- Intelligent teaching systems (smart tutoring) that adapt to the level of knowledge and needs of the learners and support and challenge them individually
- Fully autonomous driving for trains and Robot taxis – even in bad weather or in heavy traffic
- Universal translators that translate spoken language can translate
- AI-supported security systems for IT systems
- AI in the legal system, e.g. to make predictions for proceedings or analyze large portfolios of intellectual property
- Computers that interpret human facial expressions and be able to respond to it
- Seamless human-robot interaction in the production
- AI medical systems that help interpret X-rays and assist in the compilation of complex therapies (e.g. drug interactions).
- AI medical systems to support the selection of cancer therapies
- AI systems that consumers advise on legal decisions

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Austria is committed to a humane and common good-oriented Further development of artificial intelligence. Like all technologies, AI technology must be designed. We must actively face this challenge.

Austria is committed to a humane and socially acceptable development of artificial intelligence. Like all technologies, AI technology must be designed. We have to face this challenge proactively.

economic factor AI

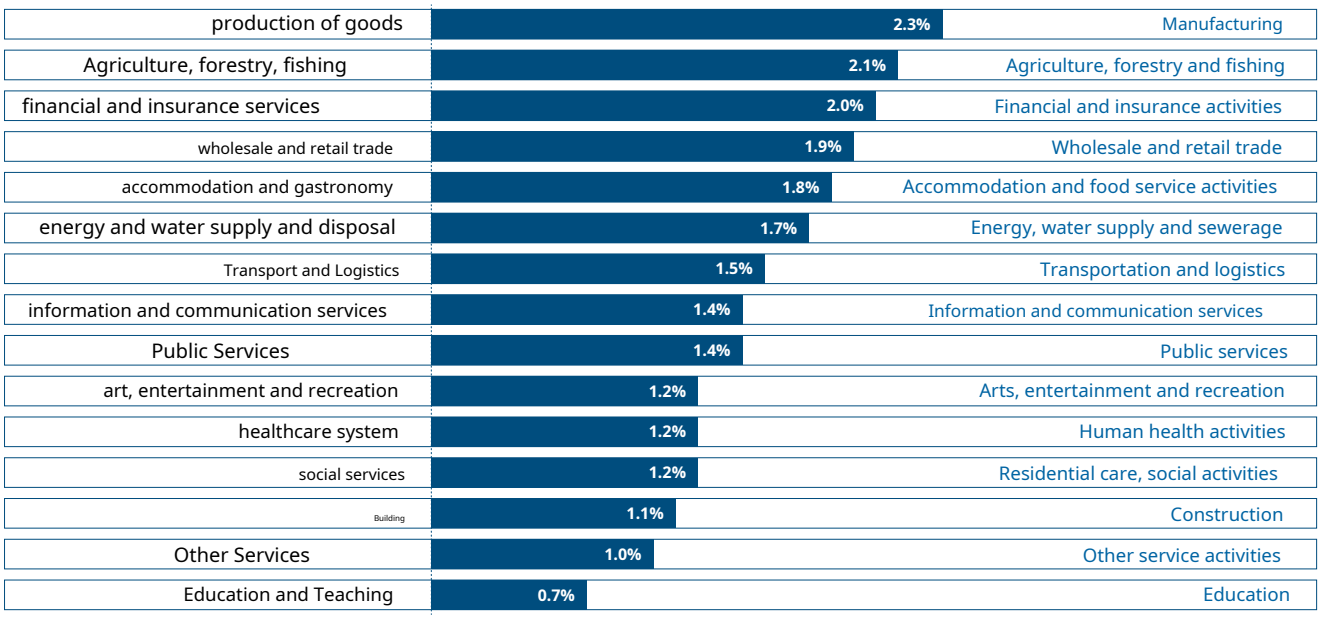
Economic factor AI

AI offers a wide range of opportunities in almost all sectors of the economy. AI can help to automate the acquisition of information and prepare decisions or even make them automatically. There is enormous potential here for increasing productivity: cognitive routine activities, where rule-based decisions are repeatedly made on the basis of similarly structured data, are widespread in the economy. Typical activities include making appointments, accounting, planning tasks, inspections, insurance claims, etc.

Various observers are therefore warning of the potential negative impact of AI on employment. What is certain is that the job profile of many jobs in corporate administration, among the self-employed, and also in public administration will change significantly as a result of AI.

But AI also offers great opportunities for product innovation, especially in the service sector, where the lack of availability and scalability of expert knowledge is a major obstacle to innovation. The possibilities for developing new services based on AI are great.

AI technologies such as learning systems offer a wide range of possible applications in a number of industries. In addition to the development of new products based on AI, the application will make a significant contribution to Austria's economic dynamism. Therefore, promoting the diffusion of AI is an important political field of action.



Estimate of the additional annual growth of value creation through AI at industry level until 2035 Source: VDI/ VDE 2018 according to Purdy and Daugherty 2017

Additional annual growth of value added related to KI at sectoral level until 2035
Source: VDI/VDE 2018, Purdy and Daugherty 2017

AI offers many opportunities in almost all sectors of the economy. AI can help automate information gathering and prepare decisions, or even make decisions automatically. There is tremendous potential for productivity gains here: cognitive routine activities, where repeated rule-based decisions are made based on similarly structured data, are widely used in the economy. Typical activities include appointments, bookkeeping, planning tasks, inspections, insurance claims, etc.

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AI and Ethics

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AI as a technology with far-reaching effects on the economy and society also touches on ethical questions. AI will significantly expand the knowledge of companies, authorities and individuals about political attitudes, financial situation and even life expectancy of individuals. The question arises as to the extent to which unequal treatment is permissible on the basis of this knowledge. A second question is the degree of autonomy we want to grant to AI-based systems. Who is responsible for the actions of these systems? These questions can only be answered in a broad social dialogue.

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AI in Austria

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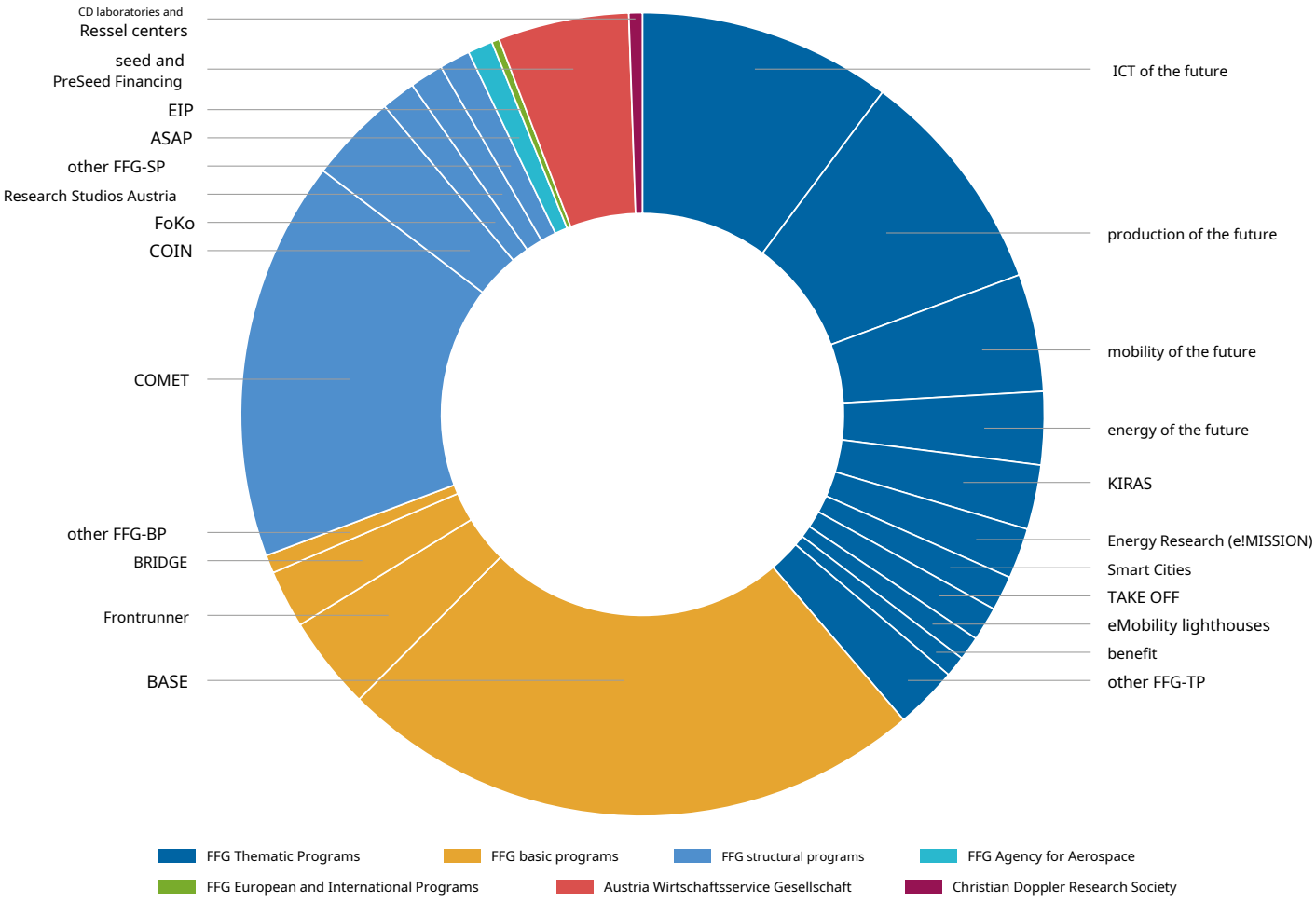
Research into artificial intelligence has a very long tradition in Austria. The traditional focal points include logical systems and knowledge-based approaches, neural networks, robotics and language-understanding systems. New focal points have emerged in the field of production and Industry 4.0, e.g. for predictive maintenance. The federal government funded this research between 2012 and 2017 with a total of EUR 349.9 million.

Austrian companies have a good basis for the successful development and innovative use of AI. Manufacturing companies in particular can benefit from the flexibility of AI systems and integrate them into Industry 4.0 systems (e.g. automotive supply industry). However, increasing digitization also offers a wide range of possible applications outside of production - from marketing and customer service to accounting. AI in the service sector is considered one of the most promising growth areas, for example in banks, insurance companies or consulting services.

Companies in Austria are both developers and users of innovative AI technologies.



Funding of AI research in federal programs between 2012 and 2017 *Public funding for AI research in federal programs between 2012 and 2017*

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Companies in Austria belong both to the developers and to the users of innovative AI technologies.

Examples of AI from Austria

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- Search in radiological image databases
- Media monitoring through automatic speech recognition
- Automatic document summarization and message texts
- Automatic detection of skin and retinal diseases
- Self-learning software for accounting and invoice management
- Automatic audit systems to improve Compliance
- Intelligent sales platforms for sales
- Expert systems for automated telephone customer service
- AI and language understanding as an intelligent automatic teacher for foreign languages
- Automatic translation
- Intelligent timetable planning
- logistics planning & optimization
- Electronic passport control
- fraud detection
- Automatic music classification and music recommendation
- Robots for textile design

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future fields for politics

Future fields for politics

In order to maximize the benefits of AI for citizens, Austrian politics will invest in various future fields.

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RESEARCH AND INNOVATION

Austria needs excellent AI research in order to benefit from international technological developments and to create a broad knowledge base that forms the basis for future applications. Despite the progress, there is still a great need for research into AI technologies, from basic research to many interface topics, such as AI applications in companies. AI research at Austrian universities and in companies is therefore an important field of action.

Research also plays an important role in training. Austria must be able to use AI technologies innovatively. To do this, it needs trained experts who have ideally become familiar with the state of research in AI through their own projects at universities and technical colleges. In addition to technical knowledge, these specialists should ideally also have knowledge of the economic fields of application.

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QUALIFICATION AND TRAINING

Knowledge of how to use AI systems is not only essential for experts. Digital skills for citizens are a prerequisite for fear-free and productive use of AI technologies and for social participation.

AI skills must therefore have their place in education and training in schools, in teaching and at universities. AI can support learners and teachers and help to make learning more effective and exciting. AI will also make parts of the knowledge and skills that are currently the focus of school education obsolete. There is therefore a need for a discussion about how the school system should respond to the changes brought about by AI.

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AI IN THE PUBLIC SECTOR

In many parts of public administration, from financial management to security, AI can help to optimize processes, e.g. through plausibility checks. AI can help to create new services for citizens. The public sector can promote the spread of AI and its use in the economy as early adopters and thus create benefits for citizens and companies, e.g. in e-government.

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In many parts of public administration, from financial management to security, AI can help streamline operations, eg through plausibility checks. AI can help create new services for citizens. The public sector can promote the dissemination of AI and its use in business as first-time adopters, thus creating benefits for citizens and the economy, eg in e-government.

AI IN THE ECONOMY

AI will create new opportunities for product and process innovation in almost all industries of the business sector. However, new technologies often come with high costs for investment and new knowledge, which can pose a challenge for the use of AI in small and medium-sized enterprises.

In addition to knowledge of the technological fundamentals, AI also requires flexibility and the willingness to try new things. Promoting AI-based start-ups can be an effective means of promoting diffusion. Established companies that rely on AI may have to say goodbye to business models that have been successful in the past. Areas of action concern issues of standardization, data protection and access to data.

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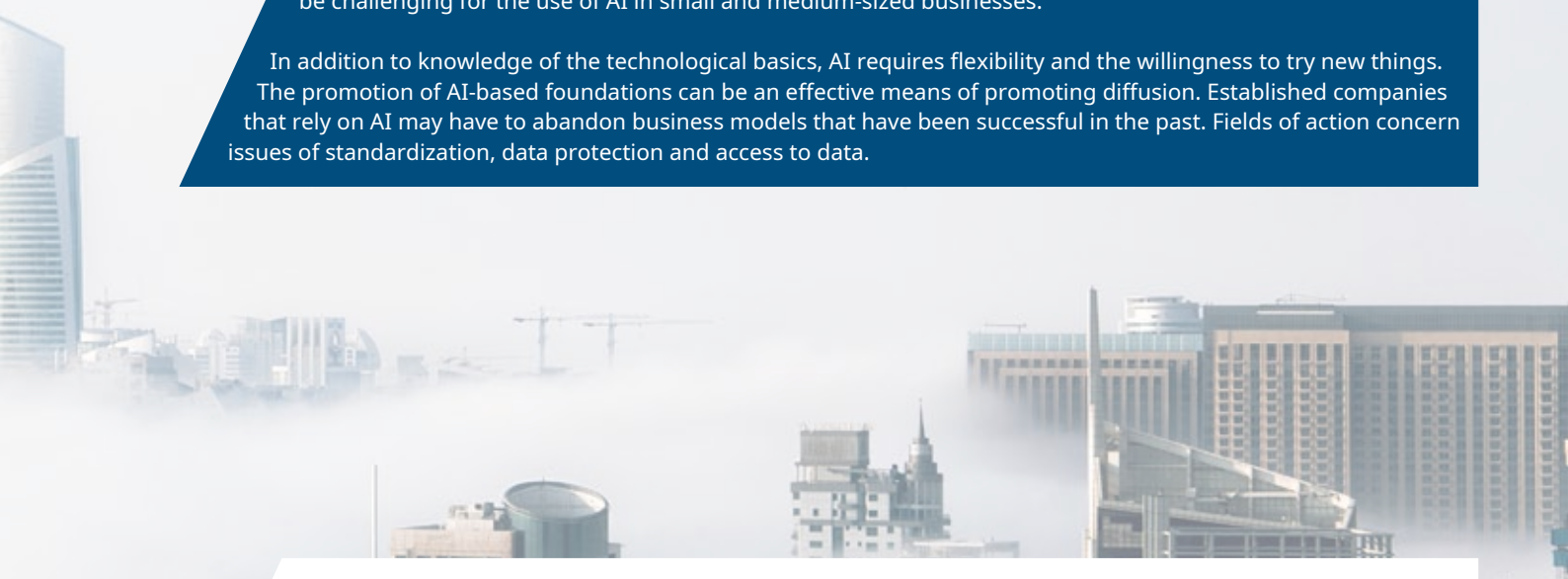

INFRASTRUCTURE FOR INDUSTRIAL LEADERSHIP POSITIONS

A high-quality digital infrastructure is an important prerequisite for the innovative use of AI. This includes a good data infrastructure, well-developed broadband connections and 5G networks as well as high-performance computer systems. This also includes infrastructure in the areas of transport, energy and a modern, interoperable healthcare system.

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SOCIETY, ETHICS AND LABOR MARKET

AI will have a major impact on the labor market and society. Various professions will change radically or even become redundant. The socially acceptable and value-oriented further development of AI is supported by a broad social discussion. Such a dialogue can dispel reservations that may stand in the way of the spread of AI and help to ensure its benefits for broad sections of the population. In addition to scientifically sound information, ethical questions and social principles must also be part of such a dialogue. Representatives from politics, civil society, science, business and the arts can make valuable contributions to this dialogue.

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AI will have a big impact on the labor market and society. Different professions will change radically or even become redundant. The socially responsible and value-oriented further development of AI will be supported by a broad societal discussion. Such a dialogue can invalidate reservations that may oppose the dissemination of AI and help to secure benefits for broad layers of the population. In addition to scientifically substantiated information, ethical questions and social principles must also be the content of such a dialogue. Political, civil society, science, business and art representatives can make essential contributions to this dialogue.

AI GOVERNANCE, SECURITY AND LAW

Legal uncertainty can delay the spread of AI, for example if there are ambiguities regarding data ownership, data protection in connection with AI applications in the cloud or in connection with autonomous driving.

To ensure that AI is widely used, politics must reduce this uncertainty. AI must be as safe, transparent and reliable as possible through clear rules for companies, the state and citizens. A stable regulatory framework can make a significant contribution to a positive investment climate for AI. This affects many areas of technology law - from data protection to product liability. National solo efforts and special regulations do not seem to be very effective due to the global nature of the technology. European and international cooperation plays a particularly important role in the governance of AI, for example in the emerging European Digital Single Market.

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Basic Information

- **Country Name:** Austria
- **Policy Publication Year:** 2023
- **Socio-Economic Context:** Austria is a high-income country with a well-developed economy characterized by a strong industrial base, particularly in manufacturing, technology, and services. The country has a high standard of living, a skilled workforce, and a robust education system. However, like many developed nations, Austria faces challenges such as an aging population and the need for digital transformation across various sectors.
- **Policy Type:** National AI Strategy

1. Key Objectives and Strategies in the Policy

Primary Goals:

- Promote the development and integration of AI technologies to enhance economic growth, public services, and societal well-being.
- Ensure ethical and responsible use of AI, addressing potential negative impacts on employment and social equity.

Strategies Outlined:

- **Investment in Research and

Development:** Focus on enhancing AI research through funding and collaboration with universities and research institutions.
- **Education and Workforce Development:** Implement AI training programs in schools and universities to build a skilled workforce capable of leveraging AI technologies.
- **Ethical AI Governance:** Establish frameworks to ensure transparency, accountability, and fairness in AI applications.
- **Support for Startups and Innovation:** Foster an environment conducive to AI startups and innovation, particularly in sectors like healthcare, transportation, and education.
- **Infrastructure Development:** Invest in digital infrastructure, including data storage, high-performance computing, and connectivity improvements.

Focus Sectors:

- Healthcare, transportation, education, finance, and public administration.

2. Comparative Analysis with Socio-Economic Countries

- **Similar Socio-Economic Countries:**

Countries like Finland and Denmark, which also emphasize ethical AI development and robust educational frameworks, show similarities in focusing on talent development and ethical governance. Both nations have established strong partnerships between government, academia, and industry to foster innovation.

- **Higher-Income Countries:** The United States and Germany have advanced strategies emphasizing significant investment in AI research and development, with robust funding mechanisms for startups and established companies. They also focus heavily on international collaboration and public-private partnerships to drive AI innovation.

- **Lower-Income Countries:** Countries like Kenya and India adopt scalable approaches to AI through partnerships with international organizations and focus on inclusive education initiatives. They emphasize leveraging AI for social good, particularly in agriculture and healthcare, which could provide insights for Austria's policy to ensure inclusivity and address societal challenges.

Objectives and Strategies:

- Austrias emphasis on ethical governance aligns with similar high-income countries but could benefit from the aggressive funding strategies seen in the U.S. and Germany.
- The focus on education is consistent with practices in Finland and Denmark, but Austria could adopt more scalable models from lower-income countries that prioritize community engagement and accessible training.

3. Gaps and Areas of Improvement

Benchmarking Against OECD Guidelines:

- The policy could enhance its focus on data privacy and bias mitigation, areas emphasized in OECD guidelines for responsible AI use.

Incorporation of Comparative Insights:

- The policy may need to address gaps in public engagement and transparency mechanisms observed in higher-income countries, ensuring that citizens are informed and involved in AI developments.

Ethical and Governance Frameworks:

- While Austria's policy includes ethical considerations, it should strengthen its

guidelines on bias, data protection, and accountability, learning from best practices in countries like Canada and Germany.

Inclusivity and Workforce Development:

- There is a need to ensure that marginalized communities are included in AI literacy programs, taking cues from successful initiatives in India and Kenya.

4. Recommendations for Policy Improvement

- **Adopting Best Practices:** Austria should consider adopting funding models from the U.S. and Germany that encourage innovation in startups and established companies alike.
- **Enhancing Ethical Frameworks:** Strengthen ethical guidelines around AI development, drawing inspiration from Canadas comprehensive approach to responsible AI governance.
- **Fostering International Cooperation:** Create partnerships with international organizations and countries leading in AI research to enhance knowledge sharing and collaborative projects.
- **Resource Allocation and Funding Mechanisms:** Optimize funding strategies by

establishing public-private partnerships similar to those seen in Denmark and Finland.

- **Scalable and Sustainable Approaches:** Implement scalable solutions for AI education and training, inspired by resource-efficient practices in lower-income countries.

5. Strengths and Innovative Approaches

- **Human-Centric Focus:** The policy emphasizes a humane and socially acceptable approach to AI development, which aligns well with Austria's cultural values.
- **Integration of AI in Public Services:** The commitment to using AI to enhance public administration and citizen services demonstrates forward-thinking and a proactive approach to leveraging technology for societal benefit.
- **Robust Research Foundation:** Austria's long-standing tradition of AI research provides a solid foundation for innovative applications, particularly in Industry 4.0 and healthcare.

Conclusion

Austria's "Artificial Intelligence Mission 2030" presents a comprehensive framework for

harnessing AI for economic and societal benefits. By addressing identified gaps and incorporating successful strategies from various countries, Austria can enhance its policy to ensure ethical, inclusive, and innovative AI development. Engaging stakeholders and fostering international cooperation will be crucial for the policy's success, positioning Austria as a leader in responsible AI governance.